June 2001

Australia

Australia is the world's leading coal exporter and has very large natural gas reserves. Australia's proven oil and gas reserves have nearly doubled in recent years, though there is much exploration yet to be done. Infrastructure is being developed to bring much more of Australia's gas reserves to market. Australia is already the third-largest LNG exporter in the Asia-Pacific region.

Note: information contained in this report is the best available as of June 2001 and can change.

BACKGROUND

After a long period of relatively high growth rates in the 1990s, Australia has suffered recently from an economic slowdown. Real GDP growth is forecast at 1.8% for 2001, and the fourth quarter of 2000 had slightly negative GDP growth. A slowdown in growth in some of Australia's major export markets - the United States, Japan, South Korea - was partly the cause of Australia's performance. Australia's resources sector is particularly sensitive to swings in these countries' economies. The high price of oil, while good for the production part of the economy, was still a negative factor as Australia is a net oil importer. The weak Australian dollar, despite its benefits for exporters, has increased consumer costs and made servicing of the overseas debt ($156 billion) more costly. Also reflected are losses in consumer and business confidence and a slight rise in unemployment. Nevertheless, low, but not negative growth is forecast for 2001. The Australian Reserve Bank cut interest rates in February 2001, and again in April 2001, and exports at least are expected not to decline substantially, though the recent collapse of HIH Insurance, Australia's second-largest general insurer, may have some negative impact on the overall economy in the short term.

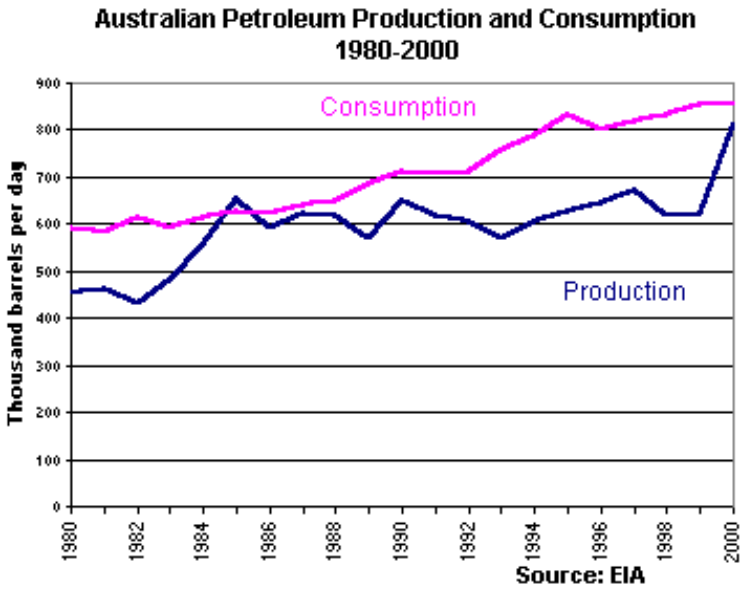
On October 3, 1998, Australian voters narrowly re-elected the ruling Liberal-National government (conservative), led by John Howard, for a second term. Howard was returned on the promise that he would overhaul Australia's tax system. The new 10% goods and services tax (GST) was introduced in July 2000. This tax was an additional factor in the slow and even negative growth in the second half of 2000 as the economy adjusted. Prime Minister Howard cut the petrol excise tax in March 2001 and has promised income tax cuts and increased spending on roads, innovation, and flood relief. This will reduce projected budget surpluses. The next election is due at the end of 2001.

Australia is a member of the OECD, the British Commonwealth, and the World Trade Organization (WTO). With an extremely low population density, it has ample natural resources for its own energy needs and is one of the few OECD countries that is a significant net energy exporter. Foreign Direct Investment (FDI) in Australia is important. Inward FDI stock stood at $118.9 billion at the end of 1999, which is about $6000 per person. Australia's hydrocarbon consumption habits are similar to those of other large, industrialized countries such as the United States and Canada.

ENERGY

Australia's energy demand increased about 3% per year during the 1990s, but has slowed to under 2% in the past two years, because of the slower economy. Oil and gas account for about 54% of Australia's energy consumption, with the rest from coal and a smaller amount (less than 7%) from renewables. Australia is relatively unexplored compared to other industrialized oil and gas producing nations in the world, perhaps due to a lack of large local markets for gas reserves, historical exploration results, and native (aboriginal) title legislation. Moreover, it is the case that some of Australia's gas reserves have been explored, but it is currently not economically viable to develop them, so they do not count as "proven reserves" in the strictest sense. Despite flat export growth overall expected in 2001, exports of minerals and energy are expected rise 24% according to the Australian Bureau of Agricultural and Resource Economics (ABARE). According to ABARE, electricity generation consumes about 29% of total energy. The state of Western Australia is especially dependent on mining and oil, which together provide 70% of the state's exports and the source for about 16.6% of employment.

OIL



Australia's proven oil reserves (not counting shale oil) increased from 1.8 billion barrels in January 1998 to 2.9 billion in January 1999 and estimates remain at 2.9 billion barrels as of January 2001. Record levels of petroleum discoveries and exploration were central to the surge in oil reserves in 1998. Crude oil production rose sharply in 2000 to its highest level ever, and is believed to have peaked at 650,000 barrels per day (bbl/d) sometime in early 2001. Production is expected to decline to about 600,000 bbl/d by 2002, according to the Australian Bureau of Agricultural and Resource Economics (ABARE). Crude oil discoveries currently being made, and those projected to be made in the near future, are not large enough to sustain current rates of production. The recent increase in production derived from the maturing Bass Strait fields and new oil from the Bonaparte and Carnarvon basins in the North West Shelf. Record production was also caused by high world oil prices. The combination of high oil prices, record production, and the low Australian dollar means that Australia's oil exports in 1999-2000 are estimated to have risen by more than 150%, to US$5 billion. In fact, Australia was a net oil exporter in the first quarter of 2000.

Broken Hill Proprietary (BHP) is Australia's largest oil producer. In the Bass Strait (off the coast of Victoria), BHP and joint venture partner Esso, the operator, produce about 200,000 bbl/d of oil and 550 million cubic feet (Mmcf) per day of natural gas from 20 fields in the offshore Gippsland Basin, according to BHP. Bass Strait's oil reserves are estimated to be 80% depleted, with remaining proven recoverable reserves of oil/condensate/LPG of 306.8 million barrels as of June 1999. The only newly developed field is the deepwater Blackback field. Bass Strait crude has a specific gravity of 47º API and a low sulfur content. Shell Australia sold its oil (and gas) assets in the Bass Strait to Woodside and Santos in March 2000. Santos is Australia's largest on-shore producer, and operates the Jackson facility in Southwest Queensland and the Mereenie field in the Amadeus Basin in Northern Territory. Santos' (and Australia's) largest on-shore facility is the Cooper Basin, which extends to both Queensland and South Australia. Gross production of crude oil in 2000 was 5.5 million barrels, or about 15,000 bbl/d.

BHP also is active in the North West Shelf (NWS) of Australia (also known as the Carnarvon Basin), where it has invested A$12 billion, mostly in natural gas development (see below), but the project also produces crude oil from the Cossack, Wanaea and Hermes oil and gas fields, about 18.6 miles north-east of North Rankin. Production is about 22,500 bbl/d of oil and condensate. Also on the NWS, U.S.-based Apache operates the Stag oilfield, which is also owned by Santos Ltd. (Australia, 54.2%) and Globex Far East (U.S., 12.5%). Sustained production surpassed 23,000 bbl/d in January 2000. Mobil Exploration and Producing Australia (MEPA), subsidiary of ExxonMobil, operates the Wandoo field in the NWS, that produces about 22,000 bbl/d. Wandoo Petroleum Pty Ltd of Australia is the 40% owner. The Wanaea and Cossack fields in the NWS have combined reserves of 233 million barrels of oil and a production life of about 25 years. Woodside Petroleum of Australia, the operator and 16.7% owner, uses the Cossack Pioneer Floating Production, Storage and Offtake (FPSO) vessel. The FPSO sits between Wanaea and Cossack supplying crude oil and gas to the North Rankin A production platform 21.1 miles away, the hub of the North West Shelf Project's offshore operations. An upgrade in 1999 created a link to the nearby Lambert and Hermes fields to the Cossack Pioneer via the addition of another 9.3 miles of flowlines that give access to reserves capable of producing at a combined 30,000 barrels of oil a day. In the first half of 2000, the Cossack Pioneer produced an average 115,000 bbl/d, a 35% increase on previous production levels, according to Woodside. Production from the Legendre fields in the NWS commenced in May 2001, with production of 50,000 bbl/d when drilling is complete sometime in mid-2001, after a capital investment of US$110 million. Woodside is the operator, with a 45.94% interest, and Apache and Santos have 31.5% and 22.56% shares, respectively. The other major areas of production in the area are Barrow Island, Thevenard Island (Saladin, Cowle, Skate, Yammaderry, Roller, Crest and Australind fields), and the Arlie oil fields (Chervil, South Pepper and North Herald). Shell Australia sold its Barrow and Thevenard assets to Santos in 2000. Woodside was the subject of a takeover bid in April 2001 by Royal Dutch/Shell, but the Australian government prevented this acquisition in the name of national interest.

Offshore Western Australia, the BHP-operated Griffin Venture has been producing oil since 1994, and includes the Griffin, Chinook, and Scindian fields. In June 2000, BHP announced that it had made a significant additional discovery at its Griffin 8 well, which will boost production from these fields from about 36,000 bbl/d to over 50,000 bbl/d. The other participants are MEPA at 35% and Inpex Alpha Ltd at 20%. Griffin crude has a specific gravity of 55º API and a low sulfur content.

Areas of active Australian oil exploration and development are located within and adjacent to the Zone of Cooperation Area (ZOCA) in the Timor Sea. ZOCA was established in 1989 by the Timor Gap Treaty between Australia and Indonesia. ZOCA is divided into three regions, one controlled by each country, and a third jointly administered. Given the recent independence of East Timor, and hence its sovereignty over most of the area of the Timor Gap Treaty with Indonesia, Australia has entered into discussions with the East Timorese government. According to *Business Week*, Australian diplomats have maintained their claim to about half of what would otherwise be oil and gas reserves in the area of East Timor. This is despite the fact that the United Nations (UN) considers Australia's claim illegitimate because it was originally negotiated with a power whose claim to the area was never recognized by the UN. There are five major investors operating in the Timor Gap, namely Phillips Petroleum Co., BHP, Santos, Woodside, and Shell Australia.

Production from the offshore Laminaria-Corallina oil fields, operated by Woodside Energy, began in November 1999. Woodside has a 50% equity interest in Production License AC/L5 and the Corallina oilfield, with BHP Petroleum (North West Shelf) Pty Ltd (25%) and Shell Development (Australia) Proprietary Limited (25%). Equity interests in the Laminaria oil field, are different, with Woodside holding 44.9%, BHP 32.6% and Shell 22.5%. The Laminaria and Corallina fields are located in a remote area of the Timor Sea, about 340 miles (550 kilometers) northwest of Darwin and 100 miles south of the Island of Timor. The proven reserves of the Laminaria-Corallina fields, as of October 2000, are about 121 million barrels, according to Woodside. The Laminaria field produced 50 million barrels after only the first eleven months of production, with peak production at 140,000 bbl/d. The Laminaria-Corallina development is the first in this part of the Timor Sea, and its floating production, storage and offloading (FPSO) facility, which can produce up to 170,000 barrels of oil a day and has a storage capacity of 1.4 million barrels, is anticipated to become the main infrastructure for development of other prospects in the area. The Elang/Kakatua/Kakatua North oil fields are located in ZOCA91-12, and also make use of the FPSO, except for Elang, which has its own FPSO. The nearest other production facility is the Jabiru Venture operated and 50% owned by Newfield (U.S.) and located 105 miles southwest of Laminaria, in the Timor Sea. Nearby is the Challis field, also 50% owned and operated by Newfield. Cumulative production of Jabiru and Challis is more than 150 million barrels. Production from the BHP-operated/50% owned Buffalo oil field, also in the Timor Gap, began in December 1999. The field is located in license WA-260-P approximately 348 miles North west of Darwin in Australian Commonwealth waters. The field has been developed using an unmanned minimum wellhead platform linked to a leased FPSO, the Buffalo Venture. The development is operated by BHP and gross production is expected to peak at 40,000 bbl/d over a three year field life. The BHP share of proven and probable reserves is around 10 million barrels. Nexen of Canada owns the other 50%.

In April 2001, Southern Pacific Petroleum and Central Pacific Minerals (SPP/CPM) of Australia purchased Suncor of Canada's share of the Stuart Oil Shale project. The project would tap an estimated three billion barrels of oil from rocks in Queensland, though so far only a demonstration plant with a capacity of 4,500 bbl/d has been built.

Refining

Australia has ten refineries with a total distillation capacity of 846,500 bbl/d. The largest facility is BP Australia's 158,500-bbl/d Kwinana refinery. ABARE has stated that restructuring in Australia's refining industry is necessary as a result of increased competition from Asian refineries with excess capacity. Furthermore, stricter environmental standards will require new investment in the industry. For example, there is 50 parts per million (ppm) limit on sulfur in diesel fuel effective 2006. Proposals exist to merge operations around the country.

NATURAL GAS

Australia's proven natural gas reserves more than doubled from 19.4 trillion cubic feet (Tcf) in 1998 to 44.6 Tcf in 1999, where they remained as of January 2001. Natural gas production increased gradually throughout the 1990s, but larger increases are expected in the coming decades. According to Woodside, natural gas will rise to 22% of primary energy use in Australia by 2005. Nevertheless, demand increases currently are not believed to be keeping pace with supply increases. This could lead to long-run over-supply, but various new liquefied natural gas (LNG) and gas-to-liquids (GTL) facilities, pipelines, and industrial plants may be able to utilize the increases in supply. The gas industry in Australia in 1999 served some 2.9 million customers and generates annual sales of about US$4.5 billion, including US$1.4 billion of liquefied natural gas exports.

The Australian gas market is in a state of flux as a result of deregulation. The states, rather than central authorities, have been in charge of deregulation, resulting in a piece-meal approach to deregulation that has been blamed for the slow pace and wide variations in the Australian domestic gas market. New South Wales was the first state to introduce competition into the market, but few choices are available to consumers. Large variations exist in the price for natural gas between different customers. Reform

for "free and fair trade in natural gas" was proposed in 1994, and agreed to by the Commonwealth and all states and territories in 1997. The enabling legislation was passed by all the state legislatures by the end of 1999, though it has not been implemented in all states and territories yet. This reform would create a national pipeline access regime intended to expand the market, create new investment in gas infrastructure, and encourage more exploration and development. Companies operating in the Timor Sea and North West Shelf are attempting to use the "cluster development" concept that reduces costs and risks, especially for stranded fields by sharing infrastructure, power, and feedstocks.

The volume of natural gas projects underway in Australia supports predictions of forthcoming increases in production. BHP is a major gas producer, and production in its Bass Strait fields (in a joint venture with Esso {ExxonMobil}) is projected to increase 80% by 2004, from 218 million cubic feet per day (Mmcf/d) in 1999. Revenue from gas production will eventually overtake revenue from crude oil production in Bass Strait. Woodside acquired several undeveloped fields in the Bass Strait in 2000.

Australia's biggest gas development is the North West Shelf Project (NWSP), with a total investment of A$12 billion. Total natural gas reserves in the NWS have been estimated at 30 to 50 trillion cubic feet (Tcf) by some analysts. The major gas/condensate fields of the project are: North Rankin, Goodwyn, Perseus and Angel. It is a two phase project, consisting of a domestic gas phase for Western Australia and an LNG phase for export to Japan. Woodside is the operator, but each phase has a different ownership structure. For domestic gas: Woodside 50%, BP 16.67%, Chevron 16.67%, BHP 8.33%, Shell 8.33%. For LNG: BHP 16.67%, Woodside 16.67%, BP 16.67%, Chevron 16.67%, Shell 16.67%, Japan Australia LNG 16.67%. Shell was eager in particular to purchase Woodside's large share of this project in its blocked acquisition attempt of Woodside. The NWSP consists of two production platforms, North Rankin A (NRA), and Goodwyn A. NRA has a processing capacity of 1.8 billion cubic feet (Bcf) per day of gas and 24,000 bbl/d of condensate, with production and four reinjection wells feeding into the platform. A 40-inch (just over one meter) diameter subsea trunkline links the platform with the onshore gas plant. Goodwyn A has a production capacity of 900 Mmcf/d of gas and 110,000 bbl/d of condensate, and is designed to have up to 30 production wells, including five re-injection wells. Pipelines from the Goodwyn A platform and Cossack Pioneer FPSO (capacity: 105 Mmcf/d and 30,000 bbl/d condensate) also flow into the main trunkline at NRA. In April 2001, the six partners in the LNG phase agreed to construct a fourth LNG train, which, at 4.2 million tons per year, would be the largest in the world. Total LNG capacity for the NWSP would be raised to 12 million tons per year. Also included in the $1.6-billion expansion is an 80-mile, 42-inch pipeline to shore and the NWSP's ninth LNG carrier. The first LNG production from the new train is expected in mid-2004. Osaka Gas and Kyushu Electric Power, both of Japan, have contracts to buy large amounts of LNG from the NWSP. Indonesia Petroleum (Inpex, Japan) made a major discovery in the Brewster Prospect in the NWS in January 2001, where estimated reserves are 10 Tcf natural gas and 600 million barrels of light crude and/or condensate.

Texaco and joint venture partners Chevron, Shell, Mobil are the major owners of the Gorgon field off Western Australia, with estimated reserves of 25 Tcf. Future development of the field depends on economically viable outlets for the gas that can bear the cost of bringing Gorgon's gas onshore.

Magellan Petroleum is the majority owner and operates the Palm Valley natural gas field in Northern Territory's Amadeus Basin, near Alice Springs. Production under compression is 17.5 Mmcf/d, and proven reserves are 116 Bcf, though possible reserves are much higher. Also in the Amadeus Basin are the Mereenie fields, with proven reserves of 201 Bcf, and possible reserves of more than twice as much. Santos is the operator and majority owner of the Mereenie fields and also of the Cooper Basin fields, which produce more gas than the Bass Strait, and supply most of the gas needs of New South Wales, South Australia and Queensland. Santos is Australia's largest onshore gas producer. In 2000, natural gas production in the Cooper Basin was 262 Bcf or about 719 Mmcf/d in addition to 3.9 million barrels of condensate and 5.2 million barrels of liquefied petroleum gas (LPG). The Moomba complex in the Cooper Basin is used for the gathering of natural gas, oil and gas liquids and the processing of sales gas and ethane. The gas liquids (condensate and liquid petroleum gases) are transported by pipeline to the Port Bonython plant on South Australia’s Eyre Peninsula for processing. The Moomba

complex is currently processing around 700 terrajoules per day gross (120,000 barrels of oil equivalent or boe) of natural gas.

Phillips is the operator and 50.3% owner of the first major Timor Sea natural gas development, which aims to recover 3.4 Tcf from the Bayu-Undan field in the Timor Gap ZOCA. It is a two-phase project; the first phase is a US$1.4-billion gas-recycle project with commercial production of 50,000 bbl/d of liquids expected in the beginning of 2004. The second phase will develop the dry gas, and will proceed as markets develop and the pipeline Phillips is negotiating to build from the Bayu-Undan field to Darwin is completed. Partner Petroz NL (8.25%) has stated that dry gas facilities at Bayu-Undan will produce 750 Mmcf/d. Phillips' partner Epic Energy is planning to build a pipeline from Darwin to to the Moomba gas hub in South Australia to transport Timor Sea natural gas into the south east Australian markets to be completed in 2004. Phillips already has concluded an agreement (January 2001) with GTL Resources (UK) to supply gas to a proposed methanol plant in Darwin. Phillips also is taking steps to bring Timor Sea gas from the 9-Tcf Greater Sunrise fields to market, having concluded a letter of intent with El Paso Energy to build an LNG facility near Darwin that would be used to develop delivery of 4.8 million tons per year of LNG to southern California. Phillips increased its share in the Woodside-operated Sunrise field to 30% in February 2001. In an example of cluster development, Woodside and Phillips concluded an agreement that was finalized in February 2001 for cooperative development of the resources of the Timor Sea. The aim is to combine the early gas delivery potential of the Bayu-Undan gas and condensate development with the large reserve base of the Greater Sunrise fields. Also in the Timor Sea, Santos has bought Natural Gas Australia's share in the Evans Shoal gas field, for a 40% share of an estimated 6.6 Tcf.

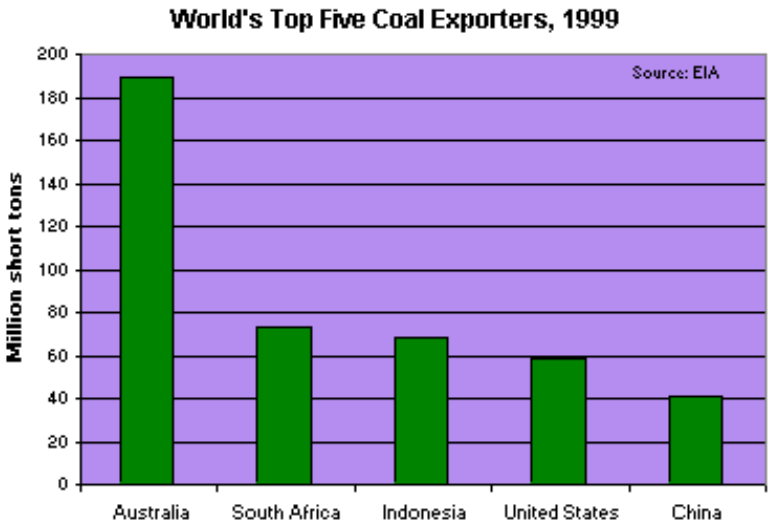
Pipelines

In addition to the pipeline construction associated with the projects above, in August 2000 Duke Energy International (U.S.) announced the completion of its $297-million, 495-mile, 173-Mmcf capacity Eastern Gas Pipeline that will supply the metropolitan areas in New South Wales and Victoria and bring competition to the Australian natural gas market. This is part of an overall effort to create a "grid" linking the New South Wales, Victorian, ACT and South Australian networks. The largest pipeline owner in Australia is Australian Pipeline Trust (APT), which owns (in many cases through subsidiaries) over 4,350 miles of natural gas pipeline in Australia, carrying about 25% of consumption. Most gas pipelines in Australia were originally government-owned, but from 1994 to 1999 they were privatized. Australia's second largest pipeline owner is Epic Energy, with about half the capacity of APT. A US$5 billion pipeline from Kutubu in the Papua New Guinea Highlands, across the Torres Strait and down the Queensland coast has been proposed by Chevron, and now is managed by ExxonMobil. The gas would supply a new power station proposed for Townsville and potential Gladstone customers and also extend to prospective customers in Brisbane.

LNG

Australia is a growing LNG producer and exporter. It is now the third-largest LNG exporter in the Asia-Pacific region. Australia's major LNG project, the NWSP, has created an estimated US$10 billion in business for Australian suppliers since 1980, and produced an extra 80,000 jobs each year of its existence. In October 2000, the government and the Australian Petroleum Production and Exploration Association launched a new policy framework to ensure that Australia remains a competitive and reliable LNG supplier. The agenda commits the government to environmental policies that will not in principle harm the LNG industry and announces a new By-law for LNG projects with an initial capital expenditure of at least US$50 million to obtain duty-free importation of capital equipment unavailable in Australia and integral to the project.

COAL



Since the mid-1980s, Australia has been the world's largest coal exporter. Exports have more than doubled during this time, from 87 million short tons (Mmst) in 1984 to 189 Mmst in 1999. Over half of Australia's total coal production is exported, with around 70% bound for Japan and the rest to other Asian markets. Australia has about 100 billion short tons (Bst) of recoverable reserves (fourth in the world), with about 52 Bst of black coal and 47 Bst of brown coal. Australian coals have good coking properties, low sulfur content ranging between 0.3% and 0.8%, and many are low in phosphorus.

BHP is Australia's largest coal producer and exporter. In March 2001 it merged with Billiton (UK) to form the world's second largest mining company, BHP Billiton. The company mines coking and thermal coal in Bowen Basin, Queensland, and the Illawarra region, New South Wales, in addition to mines owned by Billiton's subsidiary Coal Operations Australia Limited (COAL). Producing over 6 million metric tons of coal per year, COAL is the majority owner and manager of two operations in New South Wales (NSW), two project developments in NSW and one project development in Queensland. BHP secured a 16% increase in coal prices with its overseas customers in May 2001, after price decreases of 22% over the past two years. BHP's exports are expected to increase by 2.2 Mmst in the next fiscal year, to 39.1 Mmst. However, a series of recent mineworker strikes have cut into BHP's earnings.

Rio Tinto, the world's third largest mining company, bought Peabody Group's (U.S.) Australian operations for $455 million and $100 million in assumed debt in December 2000, thereby increasing its share of Australian coal production to about one quarter of total output (about 60.6 Mmst). Also in 2000, Royal Dutch Shell sold its seven coal mines and several development projects in Australia (Shell Coal Holdings Limited) to Anglo-American, the world's largest diversified mining company, in June. Shell Coal Holding's mines produced about 19 Mmst in 1999, and Anglo-American's mines already had annual production of about 66.1 million Mmst tons per year.

This is a very good time for Australian coal producers. Japanese steel mills and Australian coking coal producers have agreed on a 7.5% price rise. The price increase for thermal coal exports to Japan is expected to be about 20%. Given the weakness of the Australian dollar, in Australian dollar terms coal prices are nearly 80% higher than they were in the beginning of 2000. ABARE forecasts continued export growth - about 8% during the period 2001 to 2005. An opening of China's markets could further boost Australia's coal exports. According to ABARE, the removal of Chinese coal subsidies and tariffs could make Australian coal very competitive in China.

Australia's largest electricity producer, the New South Wales-owned Macquarie Generation, has launched an online internet site to buy spot coal.

ELECTRIC POWER

As of January 1999, Australia had an electrical generation capacity of 37.9 million kilowatts (or gigawatts). Approximately 89.3% of this capacity was thermal (mostly coal) and 10.7% of it was from renewables (mostly hydro). In 1999, Australia generated 191.7 billion kilowatthours (BkWh) of electricity, approximately a 3% increase from the previous year. The electricity generation sector accounts for about 1.4% of Australia's GDP, but employment in the electricity industry was reduced by about 50% over the 1990s.

Sector Organization

In 1996, major reforms were instituted for Australia's electricity industry. Previous to 1996, electric utilities were owned by states, but under reforms many state-owned utilities are being split up and privatized. Victoria and South Australia have already sold and long-term leased (respectively) all of their state-owned electricity utilities. Key to this reform was the creation of the National Electricity Market (NEM). The NEM is a wholesale "pool" operated by the National Electricity Market Management Company (NEMCO) to which all generators above a certain size are obliged to sell their output at prices determined by the last and highest bid for distribution through regulated transmission networks. NEMCO is a self-funding company owned by the participant states and the federal government. There are five trading regions, all of which are interconnected, but the NEM does not include the non-connected states of Tasmania, Western Australia, or the Northern Territories. Tasmania is expected to join when its electricity link to the mainland is completed in 2003. New South Wales and Victoria have been combined into a two-state regional market, and it is here that reforms have strongly reduced electricity prices due to overcapacity and strong competition, though prices have begun to rise recently as increasing demand uses previously spare capacity. Reforms did not lower prices much in Queensland or South Australia, although prices overall fell about 11% in the period 1996-2000. However, much of the savings went to large industrial/commercial customers that had the option to choose between retailers. Victoria experienced brownouts in February 2000, and some have questioned whether supply is reliable. The NEM seems to successful in encouraging new investment, as about 2,300 MW in additional capacity is being constructed or committed. Also important in sparsely populated Australia is transmission network development. Reforms have created two types of interconnectors to enhance transmission network development. Regulated interconnectors must pass strict tests in terms of contributing to market development and receive guaranteed rates of return. Unregulated interconnectors derive their income from the price difference between two sides of the interconnector. By January 2003, all electricity consumers will be able to choose between electricity retailers, and prices are expected to fall when this is implemented.

Industry Update

In August 2000, Scottish Power sold its Australian assets - the Powercor Australia electricity distribution and retail business, and a 19.9% interest in the Hazlewood Power Station - to Cheung Kong Infrastructure and Hongkong Electric Holdings for about A$2.4 billion. Powercor is one of five distributors in Victoria and supplies about 8,600 gigawatt hours (GWh) per year. Also in August 2000, Hagemeyer NV (Netherlands) acquired the Electrical Group (TEG) from Pacific Dunlop for A$343 million. TEG, which operates under the names Lawrence & Hanson and Auslec, is Australia's largest electrical distributor, with market share of 29%. Also in that same month, NRG Energy was the successful bidder for South Australia's last electric utility to be privatized, Flinders Power. The $180 million bid was for a 100-year lease.

The electricity market in Queensland is under-supplied. Two new coal-fired power plants should reverse Queensland's supply shortage. The 840-MW Millmerran plant, a joint venture owned equally by Shell and Bechtel, and the 680-MW Kogan Creek, owned by CEPA and the Southern Group, both are slated to begin generation by late 2002.

ENVIRONMENT

Energy commodities are a major source of export earnings in Australia and development of these resources in a sustainable manner is a primary policy goal of the country. Although coal is a major component of Australia's primary energy mix, increasing urban air pollution levels are more a consequence of automobile usage than coal consumption. In March 2000, Australia released the Review of Fuel Quality Requirements for Australian Transport, a report attempting to address environmental problems associated with automobile usage in areas such as Queensland, Perth and Western Sidney.

In 1999, Australia contributed 1.5% of the world's total energy-related carbon emissions. Partially because of the greenhouse gas emissions associated with agriculture, the Australian Institute indicated

that if statistics included total greenhouse gas emissions, as opposed to only energy-related emissions, then Australia would have the highest per capita carbon emissions in the developed world.

Entering the 21st century, the Australian government realizes the cost-effectiveness of reducing the environmental impacts of the energy sector. Improving end-use efficiency in the various economic sectors remains a key element of Australia's sustainable energy policy, as does the utilization of renewable energy resources.

COUNTRY OVERVIEW

Prime Minister: John Howard (since 3/11/96)
Independence: January 1, 1901 (from the United Kingdom)
Population (2000E): 19.2 million
Location/Size: Oceania, continent between the Indian Ocean and the South Pacific Ocean/7,686,850 sq. km (2,971,081 sq. mi), about the size of the contiguous United States
Major Cities: Sydney, Melbourne, Canberra (capital), Brisbane, Perth, Adelaide
Languages: English, native languages
Ethnic Groups: Caucasian (92%), Asian (7%), aboriginal and other (1%)
Religions: Anglican (26%), Catholic (26%), other Christian (24%), non-Christian (11%)
Defense (8/98): Army (25,400), Navy (14,300), Air Force (17,700)

ECONOMIC OVERVIEW

Currency: Australian Dollar ($A)
Market Exchange Rate (5/14/01): US $1=$A1.923
Nominal Gross Domestic (GDP, 2000E): $380.1 billion
Real GDP Growth Rate (2000E): 3.7% **(2001F):** 1.8%
Inflation Rate (2000): 4.5% **(2001F):** 3.3%
Unemployment Rate (2000): 6.6% **(2001F):** 7.5%
Current Account Balance (2000E): -$14.2 billion
Major Trading Partners: Japan, other Far East, European Union, United States **Major Export Products:** crude materials, food and live animals, mineral fuels and lubricants
Major Import Products: machinery and transport equipment, manufactured goods, chemicals

ENERGY OVERVIEW

Minister for Industry, Science and Resources: Nick Minchin
Proven Oil Reserves (1/1/01): 2.9 billion barrels
Oil Production (2000): 810,655 barrels per day (bbl/d), of which 721,566 bbl/d is crude oil
Oil Consumption (2000): 855,000 bbl/d
Net Oil Imports (2000): 44,345 bbl/d
Crude Refining Capacity (1/1/01): 846,500 bbl/d
Natural Gas Reserves (1/1/01): 44.6 trillion cubic feet (Tcf)
Natural Gas Production (1999): 1.1 Tcf
Natural Gas Consumption (1999): 763 billion cubic feet (Bcf)
Recoverable Coal Reserves (1999): 99.6 billion short tons
Coal Production (1999): 320.6 million short tons (Mmst)
Coal Consumption (1999): 142.3 Mmst
Electric Generation Capacity (1/1/99): 37.9 million kilowatts
Electricity Generation (1999): 191.7 billion kilowatthours
Electricity Consumption (1999): 178.3 billion kilowatthours

ENVIRONMENTAL OVERVIEW

Minister for the Environment & Heritage: Robert Hill
Minister for Forestry & Conservation: Wilson Tuckey

Total Energy Consumption (1999E): 4.7 quadrillion Btu* (1.2% of world total energy consumption)
Energy-Related Carbon Emissions (1999E): 93.9 million metric tons of carbon (1.5% of world carbon emissions)
Per Capita Energy Consumption (1999E): 249.8 million Btu (vs U.S. value of 355.8 million Btu)
Per Capita Carbon Emissions (1999E): 4.9 metric tons of carbon (vs U.S. value of 5.5 metric tons of carbon)
Energy Intensity (1999E): 11,268 Btu/ $1990 (vs U.S. value of 12,638 Btu/ $1990)**
Carbon Intensity (1999E): 0.22 metric tons of carbon/thousand $1990 (vs U.S. value of 0.19 metric tons/thousand $1990)**
Sectoral Share of Energy Consumption (1998E): Industrial (49.0%), Transportation (25.4%), Residential (15.3%), Commercial (10.3%)
Sectoral Share of Carbon Emissions (1998E): Industrial (46.4%), Transportation (26.5%), Residential (15.2%), Commercial (11.9%)
Fuel Share of Energy Consumption (1999E): Coal (43.5%), Oil (35.7%), Natural Gas (16.5%)
Fuel Share of Carbon Emissions (1999E): Coal (55.4%), Oil (32.6%), Natural Gas (12.0%)
Renewable Energy Consumption (1998E): 396 trillion Btu* (0.9% increase from 1997)
Number of People per Motor Vehicle (1998): 1.7 (vs U.S. value of 1.3)
Status in Climate Change Negotiations: Annex I country under the United Nations Framework Convention on Climate Change (ratified December 30th, 1992). Signatory to the Kyoto Protocol (April 29th, 1998). Under the Protocol, Australia has agreed to an 8% increase from 1990 emissions levels of a basket of greenhouse gases.
Major Environmental Issues: Soil erosion from overgrazing, industrial development, urbanization, and poor farming practices; soil salinity rising due to the use of poor quality water; desertification; natural habitat of many unique animal and plant species is threatened by clearing for agricultural purposes; the Great Barrier Reef off the northeast coast, the largest coral reef in the world, is threatened by increased shipping and its popularity as a tourist site; limited natural fresh water resources.
Major International Environmental Agreements: A party to the Antarctic-Environmental Protocol, Antarctic Treaty, Biodiversity, Climate Change, Endangered Species, Environmental Modification, Hazardous Wastes, Law of the Sea, Marine Dumping, Marine Life Conservation, Nuclear Test Ban, Ozone Layer Protection, Ship Pollution, Tropical Timber 83, Tropical Timber 94 and Wetlands. Has signed but not ratified, Desertification.

* The total energy consumption statistic includes petroleum, dry natural gas, coal, net hydro, nuclear, geothermal, solar and wind electric power. The renewable energy consumption statistic is based on International Energy Agency (IEA) data and includes hydropower, solar, wind, tide, geothermal, solid biomass and animal products, biomass gas and liquids, industrial and municipal wastes. Sectoral shares of energy consumption and carbon emissions are also based on IEA data.
**GDP based on EIA International Energy Annual 1998

OIL AND GAS INDUSTRIES

Major Oil and Gas Producing Regions: Western Australia; Victoria; South Australia; Queensland; Northern Territory
Major Ports: Sydney; Melbourne; Geelong; Fremantle; Adelaide; Brisbane
Major Oil Fields: Roller, Skate, Bass Strait, Wanea-Cossack, Laminaria, Corallina
Major Gas Fields: Bass Strait, Cooper Basin, North Rankin, Goodwyn, Gorgon
Major Oil Refineries (crude oil capacity): BP Amoco - Bulwer Island (69,825 bbl/d), BP Amoco - Kwinana (158,500 bbl/d), Caltex - Kurnell (114,000 bbl/d), Caltex - Lytton (105,500 bbl/d), Inland Oil Refiners - Eromanga (1,500 bbl/d), ExxonMobil - Adelaide (74,000 bbl/d), ExxonMobil - Altona (128,250 bbl/d), Shell - Clyde (85,000 bbl/d), Shell - Geelong (110,000 bbl/d)

COAL INDUSTRY

Major Coal Producing Regions: New South Wales; Queensland; Victoria; South Australia
Major Export Ports: Newcastle; Hay Point; Gladstone; Port Kembla

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Sources for this report include: AAP Information Services; Alexander's Oil and Gas Connections; Asia Pulse; Australian Petroleum Production and Exploration Association Ltd.; Dow Jones News wire service; Economist Intelligence Unit ViewsWire; Financial Times; Gas-to-Liquids News; Hart's Asian Petroleum News; Oil and Gas Journal; The Times (London); U.S. Commerce Department, International Trade Administration -- Country Commercial Guides; U.S. Energy Information Administration; WEFA Asia Economic Outlook.

Links

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U.S. Embassy in Australia
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